REMARKS

Claims 24-28, 31-40, 43-47, and 50-51 are presently pending in the application. Claims 41, 42, 48 and 49 have been cancelled. Minor amendments have been made to the claims to overcome the rejections of the claims under 35 U.S.C. § 112. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

INTERVIEW SUMMARY

The undersigned wishes to express his appreciation for the courtesy of the telephone interview with the Examiner on July 9, 2008. No agreement was reached as to the allowability of any new claims.

REJECTION UNDER 35 U.S.C. § 112

Claims 25, 43, 47, 48 and 49 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the use of the trademarked term "NITINOL". In response thereto, minor amendments have been made to claims 25, 43 and 47 to remove the use of the word "NITINOL" and to substitute equivalent material names therefor. Claims 48 and 49 have been cancelled. Reconsideration and withdrawal of this rejection is therefore respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 24, 25, 26, 29, 30, 31, 32, 35, 37, 40, 43 and 44 were rejected as being anticipated by Terasaka (U.S. 5,770,305). This rejection is respectfully traversed.

Terasaka is directed to an anisotropic conductive film that has conductive particles dispersed therein. The film is used to maintain electrical contact between electrical

terminals over a range of temperatures that the film is exposed to. It is expressly stated in column 3, lines 5-10, that "*the particles, being crushed by thermocompression, remain in a compressed state due to stress acting thereon from the outside.*" Thus, Terasaka requires the particles to be in a compressed state initially when formed into the film, and further relies on the reversion of the particles back to their "unstressed" state (i.e., austenitic state), upon the resin of the film expanding due to a temperature increase. As such, with Terasaka, the SMA particles must be heated and must start in the martensitic state so that when the temperature reaches the transition temperature of the alloy, they convert to their austenitic state.

The moldable resin being claimed in the present application is fundamentally different from the anisotropic film described in Terasaka. With the presently claimed resin, the nickel-titanium particles are preferably in their austenitic phase when molded in the resin; in other words the exact opposite of how Terasaka uses the expandable particles. Using the SMA particles of the presently claimed moldable resin in a crushed state would mostly eliminate any ability of the particles to absorb impacts, and thus destroy the compression-after-impact (CAI) strength that the SMA particles provide to the resin when added in the resin in their austenitic state.

With the resin of the present application, it is especially beneficial for the SMA particles to start in their austenitic state. This is because the stress-induced phase change (i.e., caused by an impact), the process which dissipates energy, is reversible. That is, the SMA particles can perform their function repeatedly, potentially thousands of times, as long as the particle's strain doesn't exceed roughly 8-10% (for NiTi).

To highlight this distinction, minor amendments have been made to independent claims 24, 40 and 46 to more specifically call out the austentic state that the SMA particles are in when placed in the resin. For example, the pertinent portion of claim 24 has been amended to read:

> *a plurality of shape memory alloy (SMA) particles interspersed in said base resin* <u>*while in their austenitic state;*</u>

Similar amendments have been made to independent claims 40 and 46.

It is also important to note that the resin of the present application does not require any significant temperature change of the resin before the SMA particles can operate to provide increased CAI strength. In fact, the resin of the present application does not rely on any experienced temperature change of the resin for the SMA particles to perform their function of enhancing CAI strength. Rather, the superelastic quality of the SMA particles is employed for this purpose. The Examiner will note there is no discussion or suggestion in Terasaka of using the superelastic qualities of the particles discussed therein for the purpose of increasing CAI strength, let alone how the particles would need to be employed (i.e., austenitic phase state) to accomplish this. Terasaka simply does not deal with improving the strength of a component by enhancing a resin with which the component is made, where the resin includes SMA particles in their austenitic state. Furthermore, using the particles in Terasaka in their austenitic state would appear to destroy the functionality of the particles. Put differently, using the particles in their austenitic state would prevent the particles from being able to "revert" to their non-stressed state as the film expands. For at least these reasons, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 24-31, 33, 35-38 and 40-51 were anticipated by Yamakawa et al. (WO 03/102071). Yamakawa et al., like Terasaka, relates to a thermoplastic material that includes a thermally-elongate SMA used as a filler. The primary objective of Yamakawa et al. is to provide some form of curable, thermoconductive liquid polymer that has good thermal conductivity when used in semiconductor applications in order to dissipate heat. There is a brief mention of the thermoconductive coating also functioning as a protective coating, but no specifics as to how the SMA particles might enhance this property. This reference is very much like Terasaka in that it gives no specifics, or even suggestion, as to how the SMA particles could be employed (i.e., in their austentic state) to improve the CAI strength of the thermoconductive material. Like Terasaka, it appears that in order to maintain good thermal conductivity, the SMA material must be raised above its transition point during the pre-curing, curing or post-curing process. This is obviously done to cause the SMA particles to assume their martensitic state, so that subsequent thermal changes of the finished product will allow the SMA particles to expand and maintain the thermal "connection path" through the thermoconductive coating. Again, using the SMA particles in their austenitic phase in the Yamakawa et al. material, which is how the SMA particles are used in the presently claimed disclosure, would appear to defeat the purpose of including the SMA particles in Yamakawa et al. The undersigned notes there is no reference or suggestion in Yamakawa et al. to using the SMA particles in their austentitic state, presumably because this would degrade or destroy the functioning of the SMA particles for their intended purpose in this application. For at least these reasons, reconsideration and withdrawal of the rejection in view of Yamakawa is respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 27, 28, 36, 38, 39, 41, 42 and 45-51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Terasaka in view of Herkules and Yliopisto. Hercules and Yliopisto both deal with general properties of SMA particles, but neither suggests using SMA particles in a moldable resin while the particles are in their austenitic state to improve the CAI strength of the resin. There is simply no suggestion in either Herkules or Yliopisto that SMA particles could be used in their austentic state, within a moldable resin, to significantly enhance the CAI strength of the resin.

Dependent Claims 32, 34 and 39 were also rejected as being obvious over Yamakawa et al. in view of Jenline Industries (hereinafter "Jenline"). In view of the comments concerning Yamakawa et al. provided above and the amendments to independent claim 24, it is believed that this rejection is rendered moot.

OBVIOUS TYPE DOUBLE PATENT REJECTION

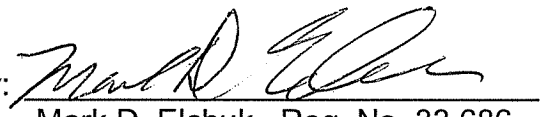
Various ones of the claims of the present application were rejected on the ground of obvious type double patenting in view of certain claims of co-pending U.S. application serial number 10/675,557. Merely to expedite prosecution, a terminal disclaimer is being submitted disclaiming the terminal portion of the present application that might extend the expiration date of any patent granted for USSN 10/675,557.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: July 10, 2008

By: 
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